SANTA CLARA COUNTY
FLOOD CONTROL
WATER DISTRICT

5750 ALMADEN EXPRESSWAY • SAN JOSE, CALIFORNIA 95118 • (408) 265-2600

DONALD K. CURRLIN GENERAL MANAGER

REPORT ON CONDITION AND STATUS OF SARATOGA CREEK WITHIN THE SANTA CLARA CITY LIMITS

(San Tomas Creek Confluence to Stevens Creek Boulevard)

by

George Korbay
Design & Construction Manager

John Beaudet
Operations & Maintenance Manager

May 1973

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SUMMARY

FLOOD AND EROSION POTENTIALS

The Saratoga Creek channel in the City of Santa Clara is about 3.5 miles in length. The channel is essentially in a seminatural condition although closely surrounded by all varieties of development. The downstream 2.3 miles of the channel has only about one-half the capacity needed to carry the design flood. The remainder of the channel upstream has a capacity great enough for a design flood or the flood that has a 1 percent chance of being equalled or exceeded in any given runoff season. Moderate to severe erosion takes place on most of the channel length.

VEGETATIVE CHARACTER OF CHANNEL

The channel is not densely vegetated, particularly in its bed which is mainly a clean sandy alluvium. There are instances of grass growth adjacent to wooden backyard fences which could be a fire hazard. The channel, for the most part, is relatively clear of deposition of man-made trash and debris.

Based on these observations, the following recommendations are made:

LONG RANGE FLOOD AND EROSION CONTROL PROGRAM

The surrounding community should assess its potential for damage from flooding and its desires for other uses of the creek and recommend a desirable course of action to be followed. The District is prepared to present and discuss with citizen and official City groups, alternative solutions ranging from flood-proofing to structural treatment of the channel.

RECOMMEND INTERIM PROCEDURE

The District and the City should immediately undertake an interim program whereby the District would:

1. Repair some localized erosion problems.

2. Remove weed growth where it is a fire hazard, and

The City would:

1. Through its Fire and Police Department, cooperate with District and adjacent residents to abate fire and security hazards.

2. Seek to diminish use of the creek as a repository for garden trash.

Detailed description and recommendations follow.

FLOODING AND EROSION

Reach 1 - From San Tomas Creek to Cabrillo Avenue (Station 10+00 to Station 28+40). Length = 1840 feet.

The typical section in this reach is a trapezoidal unlined channel with limited maintenance access roads. The existing capacity of this channel will pass 3625 cfs which corresponds to the 20-year flood with velocities ranging up to 10 feet/sec. The water surface for the design discharge of 5350 cfs would be up to 2.5 feet above natural ground if flow were to be confined. Subdivisions and backyard fences on both sides of the creek limit the available right of way to 90 feet.

Reach 2 - From Cabrillo Avenue to Warburton Avenue (Station 29+00 to Station 42+10). Length = 1310 feet.

The typical section in this reach is a trapezoidal unlined section with side slopes up to almost vertical and is eroded. The existing capacity of this channel will pass 3000 cfs which corresponds to the 12-year flood with velocities ranging up to 14 feet per second. The water surface for the design discharge of 5350 cfs would be up to 4 feet above natural ground if flow were to be confined. Bowers Park on one side of the bank and a high school on the other side of the bank limits part of this reach, while subdivisions on both sides of the creek limit the available right of way to 80 feet. There exist no adjacent access roads at the present time. The Cabrillo Avenue bridge appears to be inadequate.

Reach 3 - From Warburton Avenue to El Camino Real (Station 42+50 to Station 54+50). Length = 1200 feet.

The typical section in this reach is a trapezoidal unlined section with side slopes up to almost vertical and is eroded. The existing capacity of this channel will pass 3000 cfs which corresponds to the 12-year flood with velocities ranging up to 11 feet per second. The water surface for the design discharge of 5350 cfs would be up to 4 feet above the natural ground if flow were to be confined. Subdivisions and backyard fences on both sides of the creek limit the available right of way to 80 feet. Mobile homes and a flower nursery bound the creek for the remainder of the reach. There exist no adjacent access roads at the present time. The Warburton Avenue bridge appears inadequate.

Reach 4 - From El Camino Real to Benton Street (Station 55+20 to Station 77+70). Length = 2250 feet.

The typical section in this reach is a trapezoidal unlined section with side slopes up to almost vertical due to erosion. The existing capacity of this channel will pass 2200 cfs which corresponds to the 5-year flood with velocities ranging up to 9 feet per second. The water surface for the design discharge of 5350 cfs would be up to 5.5 feet above natural ground if flow were to be confined. Foley Avenue on one side of the creek and a subdivision on the other limits the available right of way on part of this reach, while subdivisions on both sides of the creek limit the available right of way to 70 feet for the remainder of this reach. There exist no adjacent access roads at the present time. The bridge approximately 400 feet south of Benton Street appears to be inadequate as does the Benton bridge.

Reach 5 - From Benton Avenue to Kiely Boulevard (Station 78+60 to Station 140+40). Length = 2580 feet.

The typical section in this reach is a trapezoidal earth channel with 1:1 side slopes. The existing capacity of this channel will pass 2400 cfs which corresponds to the 7-year flood with velocities ranging up to 11 feet per second. The water surface for the design discharge of 5350 cfs would be up to 6.5 feet above the natural ground if flow were to be confined. Broken concrete has been dumped in spot locations to minimize continuing erosion, while other spots still show erosion. Tennis courts and a few homes limit the available right of way for the first 500 feet in this reach, while open fields bound the creek on both sides for the remainder of this reach. This is the only reach where there is enough right of way to widen the channel and include adjacent access roads.

Reach 6 - From Kiely Boulevard to Homestead Road (Station 105+20 to Station 116+60). Length = 3720 feet.

The typical section in this reach is a trapezoidal earth channel with 1:1 side slopes. The existing capacity of this channel will pass 2400 cfs which corresponds to the 7-year flood with velocities ranging up to 12.5 feet per second. The water surface for the design discharge of 5350 cfs would be up to 4.5 feet above the natural ground if flow were to be confined. Kaiser Hospital parking lot, subdivisions and industrial development restrict the available right of way to less than 70 feet in some sections. There exist no maintenance access roads. The bridge at Kiely Boulevard appears to be inadequate.

Reach 7 - From Homestead Road to Stevenson Street (Station 118+00 to Station 130+00). Length = 1200 feet.

The typical section in this reach is a trapezoidal earth channel with varying side slopes up to almost vertical due to erosion. The existing capacity of this channel will pass 3000 cfs which corresponds to the 12-year flood with velocities ranging up to 12 feet per second. Also, the existing bridge at Homestead is inadequate and backwater floods the reach upstream. The water surface for the design discharge of 5350 cfs would be up to 4 feet above natural ground if the flow were to be confined. Subdivisions on both sides of the channel limit the available right of way to 80 feet. There exist no adjacent access roads at the present time.

Reach 8 - From Stevenson Street to Forbes Avenue (Station 130+00 to Station 136+70). Length = 670 feet.

The typical section in this reach is a natural section with mild vegetation on the banks of the creek. The existing capacity of this reach will pass the design discharge without freeboard of 5350 cfs. The velocities corresponding to the 50-year flood of 4550 cfs for erosion control are up to 12 feet per second. Subdivisions and industrial developments limit the available right of way to 85 feet. There exist no adjacent access roads at the present time.

Reach 9 - From Forbes Avenue to Pruneridge Avenue (Station 137+20 to Station 152+00). Length = 1480 feet.

The typical section in this reach is a trapezoidal natural channel with mild vegetation on the banks of the creek. The existing capacity of this reach will pass the 100-year flood of 5350 cfs plus freeboard. The velocities corresponding to the 50-year flood for erosion control are up to 15 feet per second, which at the present time is causing scouring of the banks. At some reaches there is one-foot distance between the top of bank and the backyard fences of the subdivisions. Available right of way is limited by high school and subdivision to 90 feet. There exist no adjacent access roads at the present time.

Reach 10 - From Pruneridge Avenue to Lawrence Expressway
(Station 152+70 to Station 181+00).
Length = 2830 feet.

The typical section in this reach is a trapezoidal natural section with mild vegetation on the banks of the creek. The existing capacity of this reach will pass the 100-year flood of 5350 cfs plus freeboard. The velocities corresponding to the 50-year flood for erosion control are up to 13 feet per second. Scouring takes place in a few sections along this reach. Subdivisions on both sides of the stream limit the available right of way to 85 feet. No adjacent access roads exist at the present time.

Reach 11 - From Lawrence Expressway to Stevens Creek Boulevard (Station 181+00 to Station 193+00). Length = 1200 feet.

The typical section in this reach is a trapezoidal concrete sacked riprap channel and a box under Stevens Creek Boulevard. The existing capacity in this reach will pass the 100-year flood of 5350 cfs plus freeboard. The velocities corresponding to the 50-year flood for erosion control are up to 18 feet per second. Subdivision on one side of the stream and Lawrence Expressway on the other limit the available right of way to 85 feet. No access roads. Possible access from Lawrence Expressway.

RECOMMENDATIONS RELATIVE TO LONG RANGE FLOOD CONTROL AND EROSION CONTROL PROGRAM

In the early 1960's a project was planned to excavate Saratoga Creek to provide capacity for the design flood. This project was not brought to fruition because it appeared that the adjacent community wished to preserve the channel in its existing condition. The District, instead, undertook a careful study of the existing channel to define exactly where flooding and erosion potentials existing capacity of this reach will pass the 100-year flood of 5350 cfs plus freeboard. The velocities corresponding to the 50-year flood for erosion control are up to 13 feet per second. Scouring takes place in a few sections along this reach. Subdivisions on both sides of the stream limit the available right of way to 85 feet. No adjacent access roads exist at the present time.

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RECOMMENDATIONS RELATIVE TO INTERIM PROCEDURES

A. DISTRICT

1. The District has identified some specific areas of erosion that should be attended to immediately. These are as follows:

   a. at the end of Stevenson Street

   b. at or near Sutter School

c. downstream of El Camino approximately 200 to 300 feet.

We have the following recommendations:

a. At the end of Stevenson Street erosion has occurred and the top of the bank is nearly contiguous with the right of way boundary. This condition has been in existence for nearly ten years. This bank is on the outside of a slight bend to the channel and it is therefore logical to assume that erosion will continue in this area. At one time this bank was protected with sacked concrete revetment. The local young people have been working on the revetment to such an extent that at present all that remains is the cut-off wall and about one-third or less of the sacked concrete revetment.

Recommendation: The District reconstruct the sacked concrete revetment that has been destroyed utilizing the existing cut-off and any remaining sacked concrete revetment that is structurally sound.

b. The erosion at or near Sutter School is erosion at the toe of the slope which, at this time, is quite minor and should be corrected. This bank is on the outside of a bend in the channel and the erosion will logically continue if not checked. There is no immediate danger of the erosion extending beyond the limits of our right of way. Corrective action at this time could prevent a major washout that would require extensive maintenance repair work from occurring.

Recommendation: The District would place sacked concrete revetment or other protection along the toe of the slope to restore the channel to the pre-erosion status and prevent further erosion.

c. The erosion that has occurred 200 to 300 feet downstream of El Camino Real is extensive. This erosion is typical from El Camino to approximately 500 feet below Warburton. The channel some 10 years ago was quite restricted throughout this area and of inadequate flood capacity. The erosion, so long as it does not encroach on existing development, is beneficial from a flood capacity standpoint. The erosion widening throughout this reach has nowhere exceeded our right of way. The bank has eroded under a backyard fence at one residence. It has been determined that this fence has been constructed approximately 15 feet into and on our property The owner has been apprised of this fact and advised that if he reconstructs his fence, it should be reconstructed along his property line, not in our right of way.

Recommendation: A major erosion control project downstream of El Camino is not needed at this time. Some remedial work should be done to rearrange the materials in the channel bottom to eliminate obstructions or projections or rubble that may have a tendency to deflect flowing water towards the bank or cause unnecessary turbulence.

There are also a number of other more minor erosion problems that should be corrected before they become major problems. This work will be accomplished prior to the next rainy season.

2. A survey of the creek in company of the City of Santa Clara Deputy Fire Marshall, Mr. William Fleming, was made by District staff. This survey pointed out the need for weed abatement where such weeds are adjacent to flammable fences and other structures. It is proposed that the District undertake an abatement program as follows:

a. Students from Wilcox and Buchser High Schools would be recruited before the end of the present school term for a 1 to 2-week program of hand removal of sapling growth. Students would be paid and supervised by the District.

b. Removal of this growth, which would not remove significant tree growth, would allow, next, mowing of undergrowth and grasses. This would be accomplished sometime in July and August 1973 when the District receives on-order mowing equipment. Growth removal would include areas where theundergrowth provides obvious hiding places for undesirable activities and staging areas for vandalism and other illegal acts.

c. The soil at the tops of banks would be sterilized to prevent future weed growth.

B. CITY

In the opinion of City police forces, the erection of chain link fencing along the top of banks would not have a significant enough effect on security of adjacent residences to make a large expenditure worthwhile. It is estimated that such a project would cost about $150,000. Rather, it is the opinion of the police that much can be gained from better citizen reporting of violations in two areas:

1. In the matter of dumping of trash into the creek, the City police could and would prosecute offenders under existing City and District Ordinances.

2. Security of adjacent residents could be greatly enhanced by more timely notification to the police.

It is suggested that a recommendation be made to the City to prepare and distribute an informational notice to be included in their publication "Mission Scenes" which is mailed to residents with their utility bills. The notice would remind residents of their duties in regard to trash dumping in this and other creeks and would inform them that their own police forces are capable of dealing with violators. Residents would be advised of the City police telephone number and asked to use it when observing these acts.

The City police department would formulate possible additional ways to enhance their patrol systems and access to repeated trouble spots.